

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1   **Claim 1.**   (Currently amended) A method of extracting structural information from a NMR  
2   data set for a selected macromolecule in an intact biological compartment wherein said selected  
3   macromolecule is labeled with ~~an~~ a NMR-detectable nucleus, such that said NMR-detectable  
4   nucleus is present in said selected macromolecule in an amount greater than is naturally abundant  
5   in said macromolecule, said method comprising:

6       (a) contacting said intact biological compartment with radio frequency energy, thereby  
7               producing an excited NMR-detectable nucleus;  
8       (b) collecting radio frequency data from said excited NMR-detectable nucleus, thereby  
9               producing said NMR data set, and  
10      (c) analyzing said data set to extract said structural information from the NMR data set  
11               for said selected macromolecule ~~from said data set~~.

1   **Claim 2.**   (Currently amended) The method according to claim 1, wherein said selected  
2   macromolecule is overexpressed in said intact biological compartment.

1   **Claim 3.**   (Currently amended) The method according to claim 1, wherein said NMR-  
2   detectable nucleus is present in an amount detectable by NMR of said intact biological  
3   compartment.

1   **Claim 4.**   (Original) The method according to claim 1, wherein said selected  
2   macromolecule is a member selected from the group consisting of proteins, saccharides,  
3   glycoproteins, and nucleic acids.

1   **Claims 5. - 8.** (Cancelled)

1   **Claim 9.**   (Currently amended) The method according to claim 1, wherein said selected  
2   macromolecule is further labeled with deuterium.

1   **Claim 10.** (Currently amended) The method according to claim 1, wherein said intact  
2    biological compartment is present in a suspension.

1   **Claim 11.** (Original) The method according to claim 1, wherein said structural information  
2    is conformational information.

1   **Claims 12. - 13.** (Cancelled)

1   **Claim 14.** (Original) The method according to claim 1, wherein said structural information  
2    is for a first conformation of said selected macromolecule and a second conformation of said  
3    selected macromolecule.

1   **Claim 15.** (Original) The method according to claim 1, wherein said data set is acquired by  
2    a triple resonance NMR method.

1   **Claim 16.** (Original) The method according to claim 15, wherein said triple resonance NMR  
2    experiment is a member selected from HSQC and TROSY.

1   **Claim 17.** (Currently amended) The method according to claim 1, wherein said intact  
2    biological compartment is prepared by a method comprising:  
3       (a) transforming an unlabeled precursor of said labeled intact biological compartment  
4            with a nucleic acid encoding said selected macromolecule, wherein said nucleic  
5            acid is operably linked to a promoter non-native to said unlabeled precursor cell  
6            of said intact biological compartment, thereby producing a transformed intact  
7            biological compartment;  
8       (b) incubating said transformed intact biological compartment in a medium comprising  
9            said NMR-detectable nucleus; and  
10      (c) inducing said transformed intact biological compartment, thereby preparing said  
11        labeled-intact biological compartment.

1   **Claim 18.** (Currently amended) The method according to claim 17, further comprising:  
2       (d) inhibiting essentially all transcription in said transformed intact biological  
3            compartment, which is under control of promoters native to said unlabeled

4 precursor of said intact biological compartment, while allowing transcription  
5 under control of said non-native promoter to proceed.

1 **Claim 19.** (Cancelled)

1 **Claim 20.** (Original) The method according to claim 17, wherein said medium is deuterated.

1 **Claim 21.** (Currently amended) The method according to claim 17, wherein said intact  
2 biological compartment is a bacterial cell.

1 **Claim 22.** (Original) The method according to claim 17, wherein the non-native promoter  
2 encodes an RNA polymerase that is operable during step (d).

1 **Claim 23.** (Original) The method according to claim 17, wherein the non-native promoter is  
2 a phage promoter.

1 **Claim 24.** (Currently amended) The method according to claim 18, wherein said inhibiting  
2 is caused by administering an inhibitor to said unlabeled precursor of said intact biological  
3 compartment in an amount sufficient to cause said inhibiting.

1 **Claim 25.** (Original) The method according to claim 24, wherein said inhibitor is  
2 rifampicin.

1 **Claim 26.** (Currently amended) The method of claim 1, wherein said selected  
2 macromolecule experiences a local the viscosity inside said intact biological compartment is at  
3 least 2 fold greater than the viscosity of pure water, wherein said local viscosity inside said intact  
4 biological compartment and said viscosity of said pure water are determined at the same  
5 temperature.

1 **Claim 27.** (Currently amended) The method of claim 1, wherein said selected  
2 macromolecule is present in said intact biological compartment at a weight percent of up to 0.3%  
3 compared to the total weight of said intact biological compartment.

1 **Claim 28.** (Currently amended) The method of claim 1, wherein said selected  
2 macromolecule is present in said intact biological compartment at a weight percent of up to 50%  
3 compared to the total weight of said intact biological compartment.

1 **Claim 29.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 5 kDa.

1 **Claim 30.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 25 kDa.

1 **Claim 31.** (Original) The method of claim 1, wherein said selected macromolecule has a  
2 molecular weight of at least 70 kDa.

1 **Claim 32.** (Currently amended) The method of claim 1, wherein said intact biological  
2 compartment is a living cell.

1 **Claim 33.** (Currently amended) The method of claim 1, wherein said intact biological  
2 compartment is a cell that has been metabolically arrested.

1 **Claim 34.** (Original) The method of claim 1, wherein said selected macromolecule is  
2 expressed from a plasmid.

1 **Claim 35.** (Original) The method of claim 1, using a multidimensional multinuclear  
2 method.

1 **Claim 36.** (Currently amended) The method of claim 35, using an HNCA experiment  
2 wherein said multidimensional multinuclear method is an HNCA experiment.

1 **Claim 37.** (Currently amended) The method of claim 35, using an HMQC experiment  
2 wherein said multidimensional multinuclear method is an HMQC experiment.

1 **Claim 38.** (Currently amended) The method of claim 1, wherein said intact biological  
2 compartment is a biological cell.

1   **Claim 39.** (Currently amended) The method of claim 38, wherein said biological cell is a  
2   prokaryotic cell.

1   **Claim 40.** (Currently amended) The method of claim 39, wherein said prokaryotic cell is a  
2   an *E. coli* cell.

1   **Claim 41.** (Currently amended) The method of claim 38, wherein said biological cell is a an  
2   eukaryotic cell.

1   **Claim 42.** (Currently amended) The method of claim 41, wherein said eukaryotic cell is a  
2   yeast cell.

1   **Claim 43.** (Currently amended) The method of claim 41, wherein said eukaryotic cell is a  
2   mammalian cell.

1   **Claim 44.** (Currently amended) The method of claim 43, wherein said mammalian cell is a  
2   human cell.

1   **Claims 45. - 88.** (Cancelled)

1   **Claim 89.** (New) The method of claim 1, wherein said structural information is a  
2   representation of a conformation of a selected macromolecule at a resolution sufficient to  
3   determine the relative locations of two or more atoms.

1   **Claim 90.** (New) The method of claim 1, wherein said intact biological compartment is not  
2   immobilized.

1   **Claim 91.** (New) A method of extracting structural information from a NMR data set for a  
2   selected macromolecule in an intact biological compartment, wherein said selected  
3   macromolecule is labeled with sufficient NMR-detectable nuclei in order to be detectable by an  
4   NMR instrument, said method comprising:

5                   (a) contacting said intact biological compartment with radio frequency energy, thereby  
6                   producing an excited NMR-detectable nucleus;

7 (b) collecting radio frequency data from said excited NMR-detectable nucleus, thereby  
8 producing said NMR data set, and  
9 (c) analyzing said data set to extract said structural information from the NMR data set  
10 for said selected macromolecule.